

**STATEMENT OF**  
**DAVID L. WINSTEAD**  
**COMMISSIONER**  
**PUBLIC BUILDINGS SERVICE**  
**U.S. GENERAL SERVICES ADMINISTRATION**  
**BEFORE THE**  
**SUBCOMMITTEE ON ECONOMIC DEVELOPMENT,**  
**PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT**  
**COMMITTEE ON**  
**TRANSPORTATION AND INFRASTRUCTURE**  
**U.S. HOUSE OF REPRESENTATIVES**

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Good morning, Chairman Norton, Ranking Member Graves, and Members of the Subcommittee. My name is David Winstead and I am the Commissioner of the Public Buildings Service (PBS) in the U.S. General Services Administration (GSA). I am pleased to appear before you again to discuss how GSA is leading by example in energy conservation. Today, I will focus on four general areas: 1) GSA's recent history in energy savings; (2) Building operations and customer outreach; 3) Efficient building systems in renovations and new construction; 4) and Utility procurements. I will also offer a few ideas that may assist the Subcommittee in further promoting cost-effective energy strategies in the Federal facilities.

The Federal Government is the largest single consumer of energy in the United States. According to the Department of Energy, Federal buildings account for 30% of the Government's energy use. GSA has an opportunity—and a responsibility—to lead by example and to demonstrate how we can reduce energy consumption through efficient operations, customer outreach, new and efficient building systems, and cost-effective utility procurements.

### **GSA's Record of Conservation**

GSA has a strong record of energy conservation. Between 1985 and 2005, GSA achieved the 30 percent reduction in energy consumption target set by the Energy Policy Act of 1992. We are making great strides in complying with the Presidential Executive Order 13423, which requires an additional 30% reduction from a 2003 baseline by the end of FY 2015. At the end of Fiscal Year 2006, we reduced the overall

energy consumption of our inventory by 4.7 percent compared to 2003 – which is double the reduction requirement of the Energy Policy Act of 2005, and more than 50 percent better than the goal in the President's new Executive Order (13423).

We currently operate our buildings at costs that are 9 percent below comparable buildings in the private sector, and we pay 4.2 percent less for utilities. Some of this reduction is attributable to the investments both Congress and GSA made in building modernizations and stand-alone energy conservation projects over the past 15 years. Another key reason for this reduction is a result of the concerted efforts of GSA Property Managers working closely together with our customers.

Of the energy used in buildings today, nearly 30 percent is consumed for lighting and office equipment. Early on, GSA saw this as an opportunity for conservation. During the early 1990s we extensively retrofitted existing buildings with new energy efficient lighting systems. In fact, we met our early goal of 20 percent energy reduction between 1985 and 2000 primarily through these retrofits. Since then, GSA has moved towards using a new generation of integrated lighting products, coupled with building-wide design strategies such as day-lighting, floor plates that maximize natural light, split task/ambient lighting system, light controls and new glazing materials. While some of these new efficient lighting products are initially more costly and technologically challenging, they provide greater energy savings in the long run since they not only reduce the amount of energy used for lighting, they also produce less heat. This reduces the amount of air conditioning needed to cool the building, as well as the size of

the mechanical systems needed, resulting in even greater energy savings. Although a simple concept to understand, this is an integrated, whole building approach to designing buildings.

### **Efficient Building Operations and Customer Outreach**

We actively manage the energy consumption in our buildings and have achieved both energy and cost savings. In part, these lower costs are directly attributable to energy conservation projects but just as importantly, they are attributable to good energy management practices and aggressive good customer outreach efforts.

#### **Energy Management Practices**

##### **Energy Tracking**

We track energy consumption monthly at every GSA facility. Our system provides the status of energy trends as they relate to past or future building activities that affect energy consumption. This allows us to target opportunities for operations improvement or energy retrofits—as well as to understand those trends and compare our performance to similar buildings in our inventory and with that of the private sector.

##### **Energy Audits**

GSA continuously conducts energy audits of its real property inventory to identify life cycle cost effective energy conservation measures. We audit approximately 10% of our space inventory in any given year.

## Building Operations

Over the past three years, 33 of our buildings reduced their energy consumption by more than 20 percent. We looked across our inventory to determine which locations had the most success in reducing energy. We reviewed with our Property Managers at those locations, the details of their energy reduction activities.

In a few buildings, we used ESPCs (Energy Savings Performance Contracts); where a private firm invests in the energy retrofit of a building and then is paid from the guaranteed savings achieved. In most of the other buildings, the Facility Manager identified things we and our customers could do to save energy. These included:

- Turning off perimeter units, lights and office equipment at the end of the business day;
- Not using space heaters;
- Eliminating some non-essential 24 hour equipment operations;
- Lighting retrofits;
- Adjusting lighting control systems to match the needs of the tenants;
- Replacing exterior and emergency lights with LEDs (Light-Emitting Diodes); and
- Replacing gas engines with electric motors.

In other instances, equipment (like servers) needing extra cooling was consolidated in adjacent areas. Old hot water heaters were replaced with tankless units—where you

don't waste energy keeping a reservoir of water hot. One of the most important actions we took however, was "just walking around" the building and talking to the tenants about what they could do.

While these are hardly all the actions our Property Managers have taken—they show that with concentrated effort, often dramatic improvements can be made, with cost effective expenditures.

### Customer Outreach

As Property Managers, we understand that customer outreach is a cornerstone of our operation and we seek to inspire our customers to join us in the challenge of conserving energy.

In response to the Energy Policy Act of 1992, GSA embarked on a number of ambitious initiatives to educate our own Property Managers, and our customers through informational campaigns, customer sessions, workshops and annual Federal energy conferences. We also established a network of GSA Regional Energy Coordinators tasked with implementing our ambitious energy action plans as well as reaching out to our customer agencies.

Since the early 1990s, a number of Executive Orders, as well as the Energy Policy Act of 2005, reiterated the importance of energy conservation, efficiency and good management. GSA looked once again to our energy management infrastructure and our

experts to develop strategies and action plans to help us achieve our goals using new products and technologies. On the heels of the Energy Policy Act of 2005, the Nation witnessed the unparalleled destruction of Hurricane Katrina and the resultant energy shortages. The President issued a directive to Federal agencies imploring them to lead the Nation in conserving fuel and to review their existing operating policies. Following this directive, I issued a memorandum to our Assistant Regional Administrators (ARAs) for Public Buildings conveying our Emergency Energy Action Plan and identified three key elements:

1. Internal PBS facility operations and projects with immediate impact;
2. Customer outreach initiatives; and
3. Suggested workplace practices for tenants.

These were low-cost initiatives that could quickly reduce our energy usage.

Nationwide, our Regional Property Managers as well as our Regional Energy Coordinators rallied together to implement the emergency action plan. We saw a great deal of innovation and creativity in getting the word out and I would like to describe some of these initiatives.

- Using the information provided in my memorandum to the ARAs, the Northeast and Caribbean Region sent out reminders to customers to conserve energy, turn off lights, and shut down office equipment if it wasn't being used. Property Managers installed relatively low cost occupancy sensors to aid customers in their effort to turn off lights. At our Federal Building in Albany, NY, the Property

Manager offered to install occupancy sensors if the customers desired it in their workplaces.

- The Property Manager for our East Philadelphia Office in the Mid-Atlantic Region incorporated the suggestions presented in the Emergency Energy Action Plan in the April 2006 customer bulletin. She continues to feature energy tips and accolades for conservation in her bulletins. For example, she recognized the Lighthouse Cafe, the American Heritage Federal Credit Union and the Alrod Security Office for installing light sensors in her March 2007 bulletin.
- Our Property Managers, in the National Capital Region, continue their emphasis on energy conservation. I have included the brochure of their Energy Curtailment Program in the attached handouts and, as you will note, stresses the importance of an effective partnership with customer agencies for successful energy management. I will describe what the energy curtailment program can achieve in my discussion of advanced metering below.

These are just a few examples of building level customer outreach efforts. In each of our 11 Regions similar creativity and innovation can be found in our customer outreach as we search for common sense low and energy conservation measures. I have included other examples in the handouts accompanying my testimony.



## **Efficient Building Systems in Renovations and New Construction**

### **Building Modernizations**

While we continue to explore, test, and adopt new technologies in our construction program, some of our best opportunities for improving energy efficiency lie in building modernizations. We achieved tremendous efficiencies in the following modernizations:

- At the Charles E. Bennett Federal Building in Jacksonville, Florida, GSA used an integrated energy efficient design approach and achieved a reduction of nearly 24 billion British Thermal Units (BTUs) in energy consumption, a more than 60 percent drop. This is enough energy to power 208 homes for one year. The project received a U.S. Department of Energy Federal Energy and Water Management Award.
- The John J. Duncan Federal Building in Knoxville, Tennessee underwent a comprehensive building re-commissioning. Improvements included the installation of a new building control system, along with lighting upgrades and motion sensors, resulting in a savings of approximately 1.7 billion BTUs in FY2005, which exceeded the target goal of 33 percent. GSA also pursued a number of water management measures including the retrofit of restrooms with water-saving equipment, saving 400,000 gallons of water a year, and the installation of secondary water meters to reduce water sewage and runoff charges. The building successfully attained an Energy Star rating of 94 out of 100 and qualified for Leadership in Energy and Environmental Design certification.

### Solar and Geothermal Energy

GSA is also incorporating solar and other on-site generated renewable energy technologies in our building design and retrofit programs consistent with the President's emphasis on the development of on-site renewable power. In Fiscal Year 2006, GSA used an estimated 3.3 billion BTUs in energy from self-generated renewable projects.

We estimate that:

- 543.7 megawatt hours of the total came from GSA's 12 solar photovoltaic installations,
- 600 million BTUs came from GSA's two solar thermal projects, and
- 830 million BTUs came from the one completed geothermal project.

In Fiscal Year 2006, GSA also began construction of two new photovoltaic (PV) systems: The first is a 40 kilowatt array at the Trenton Courthouse Annex in Trenton, New Jersey. The second is a 377 kilowatt building-integrated photovoltaic system at the National Archives and Records Administration (NARA) facility in Waltham, Massachusetts. The NARA facility is covered by a completely integrated roof and solar system—the solar panels are the roof. The flexible, flat panel photovoltaic array is heat-welded into the roofing material and qualifies as a "Cool Roof" under the U.S. Environmental Protection Agency's Energy Star program. The project is estimated to save approximately \$204,000 and 5.55 billion BTUs annually. It is now producing more than 50 percent of the building's electricity needs.

Additionally, at the Denver Federal Center, we funded a 1 megawatt pole-mounted solar photovoltaic array on 6.5 acres. This “solar park” will save \$405,000 per year in electricity costs. The energy obtained from the solar park will not only serve the tenants of the Denver Federal Center, but the excess electricity will feed directly into the regional electric grid.

### New Construction

Also in Denver, we have recently constructed the Alfred A. Arraj U.S. Courthouse; an excellent example of how a variety of sustainable design strategies can work together for energy and lighting efficiency. The public corridors of the building are oriented to the southeast to maximize solar exposure. Oversized windows provide visitors with a connection to the outdoors and magnificent views of downtown Denver. High efficiency triple-glazed windows minimize the need for heating and cooling. Internal light shelves bounce daylight onto light-colored surfaces so that it is then reflected deep into the interior. Overall, natural light is available throughout 75% of the building.

Last week in San Francisco, I attended the dedication of our newest Federal building which minimizes its energy consumption by taking advantage of favorable local climate conditions. This building is designed to self-ventilate its occupants through the simple movement of cool air from natural ventilation. That is a great example of avoiding energy use. The upper floors of the tower are not air conditioned at all. The design of this building takes advantage of, and is very sensitive, to the low humidity and moderate temperatures of the Bay area.

## Energy Retrofits

In recent years Congress has approved between \$26 and \$30 million dollars in an annual Repairs and Alterations appropriation line item for Energy retrofits. We maximize the effectiveness of this investment by carefully analyzing every project and selecting those with the highest return on the investment. In simple payback terms (not as complex as the life cycle cost analysis we do) these projects ranged from 3.8 years for building “tune-ups”, 3.9 years for lighting retrofits; 5.4 years for projects that addressed the power control systems; 6.2 years for improvements in chillers and boilers; to 21 years for solar projects. I have included a chart that summarizes these projects from last fiscal year—a collective investment of \$29 million that results in saving 972 billion BTUs of energy, and saving \$4.7 million every year. This is an average payback of just over 6 years, and if the long-term solar project is eliminated in the calculation, about 5 ½ years.

<b><u>GSA FY06 Energy Program</u></b>			
<b>Project Category</b>	<b>No. of Projects</b>	<b>Amount Funded</b>	<b>Average Payback</b>
Control/Commissioning	15	\$3,251,320	3.85
Lighting	7	\$1,327,668	3.93
HVAC	14	\$13,113,774	6.11
Solar	3	\$4,643,500	21.02
Other	8	\$6,827,204	5.86
<b>All Projects Avg. Payback</b>	<b>47</b>	<b>\$29,163,466</b>	<b>6.19</b>
Note: 1. Other includes projects with multiple Energy Conservation Measures that cover more than one category			

The Energy Policy Act also directs us to install advanced metering to measure our electricity use in buildings. We started installing advanced meters in the Washington DC and New York areas even before the law required us to do so. In the long run, advanced meters will save money by allowing us to manage power consumption more strategically. Perhaps more importantly, advanced metering will help us buy power at better prices, because we will know our use patterns in a way we just do not today.

I'd also like to show you just what we can do with advanced meters, using an example right here in Washington. This is just one building's example, but it is an example of what occurred across the District last week. You may remember that there was a heatwave last Tuesday, with temperatures reaching 98 degrees. GSA sent out an alert that electricity would be both scarce and costly and asked its Property Managers to activate conservation measures. Each Property Manager took action with the tenants in their buildings, to adjust operations and reduce the Government's demand for electricity.

As the chart in the handout illustrates, although the temperature on Tuesday was higher than the past two weeks, we actually used less electricity. This avoided the high cost of energy on a hot day—when we would have incurred severe price penalties if we had not reduced demand. In addition, GSA was able to contribute to the electric load management in the Washington area just as we did last summer by “shedding load” – sometimes allowing buildings to get a little warmer and more humid in the late afternoon – and thus, helping to avert a major brown-out in this area. We can only do this with advanced meters—where the Property Manager can see minute by minute what is going on in the building, and we can monitor all buildings from a central point.

### **Cost-effective Energy (or Utility) Procurements.**

One other way GSA is able to save energy costs is to develop procurement strategies for natural gas, electricity and green power that achieve the best competitive price.

### **Public Utilities**

To negotiate the best rates, GSA awards large public utility area wide contracts for electricity, natural gas, steam, chilled water, and water and sewage services that are regulated by public utility commissions, utility cooperatives or municipal utility companies. In many cases, these contracts allow for demand side management services, which include alternative financing for energy projects. In addition, GSA provides leadership in developing contracting vehicles, allowing end-users to meet multiple Federal energy requirements in both Federal statutes and executive orders.

It is important to remember that GSA procures energy not just for the GSA buildings, but government-wide. These area-wide contracts, as well as de-regulated energy purchases, and renewable energy are used by GSA building operators, and many other agencies which operate buildings. Seventy percent of the energy procured is used by 35 agencies for non-GSA buildings. This consolidated procurement gives the Government the best possible price.

### Renewable Energy

GSA is a national leader in the purchase and use of renewable power from utility companies. The President's Executive Order requires that half of the renewable power purchased by Federal agencies to meet the EPACT 2005 statutory goals be purchased directly from new renewable sources.

In 2006, 4.5 percent of our electricity was generated from renewable sources or bought through renewable energy certificates, compared with the national average of 2.3 percent. We are proud of the progress we have made in this area, but we can do more. We have found more opportunities to buy renewable power at competitive prices as the cost for electricity and natural gas has increased. However, recent State and local regulatory policies and increasing customer preferences are driving increased demand for renewable power. If this trend continues without a corresponding increase in renewable supply, price premiums for renewable power may reach or surpass previous historical highs.

Over the last four years, GSA has purchased almost 950,000 megawatt hours of energy from renewable sources through competitive power contracts and through the use of green power programs offered by local distribution companies. For example:

The Binghamton Federal Building in New York State is the first Federal facility in the nation powered by 100 percent renewable energy. The power flows from a new wind turbine installed at the Fenner Wind Farm in the town of Fenner, New York. This project not only demonstrated GSA's commitment to energy independence and environmental stewardship, but also helped to spur the growth of a new wind power industry in a small community.

GSA awarded a contract to supply the National Park Service's Statue of Liberty and Ellis Island with electricity generated from 100 percent wind resources. The three-year contract will supply approximately 28 million kilowatt hours of renewable energy to the two landmark sites. The Statue of Liberty is now not only a beacon of freedom to the rest of the world, but also a welcome sign of the future in renewable energy.

### **Further Promotion of Energy Strategies**

As I have illustrated, GSA is a true leader in energy conservation. But we can always do more. GSA could achieve even more advancements in energy conservation and efficient building systems, with additional statutory authority reforms are need in the following areas: 1) extending utility service contracting authority; 2) allowing funding flexibility for energy innovations; and 3) providing longer term life cycle cost authority.



### Extending GSA utility service contracting authority from 10 to 20 years

As I mentioned earlier, GSA contracts for utility services (all forms of energy) on behalf of GSA and other Federal agencies. We are currently limited to a maximum term of 10 years but could obtain very competitive rates for renewable power if the term of the contract were up to 20 years, not 10. This is largely due to the current lack of renewable power plants and the large investment needed to develop new capacity. Despite the Government's general termination for convenience clause, a prospective power producer could obtain financing to construct new plants with a contract for 20 years. This is particularly true for wind-generated power.

The rates available to the Government for such long-term contracts are competitive with electricity rates today. Without the authority to contract for energy from renewable energy providers for more than ten years, GSA is unable to benefit from the relatively inexpensive energy they would generate, and unable to use the Government's purchasing power to spur new private sector renewable energy production.

### Allowing funding flexibility for energy innovations

It might be helpful if there were some flexibility in capital projects (the ones for which we submit prospectuses) for GSA to incorporate energy savings technology that was not included in the design at the time the prospectus was submitted.

### Allowing for longer-term life cycle cost analysis

The National Energy Conservation Policy Act of 1978 (42 U.S.C. § 8254) requires that the life cycle cost methods be applied to the design of new Federal buildings and the application of energy conservation measures to existing Federal buildings and *set the maximum expected life of a building or system at 25 years*. Certain building systems have longer expected life cycles; a time horizon of more than 25 years for such systems would allow the Government to make more cost-effective investment decisions. These systems include fuel cells; building fabric systems such as curtain walls; and certain mechanical equipment.

### **Conclusion**

GSA is leading by example: we demonstrate how a combination of operational diligence, coupled with customer outreach and participation, good energy management practices and targeted energy retrofit projects, can yield handsome results.

Thank you for the opportunity to talk about GSA's leadership role in this area. I look forward to working with the Subcommittee on this matter of vital interest to our country.